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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/964,785
Filing Date: September 26, 2001
Appellant(s): LODA ET AL.

Peter K. Hahn
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 13, 2007 appealing from the Office action mailed January 11, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is substantially correct.

The Appellant indicated Claims 1-33, 36-46 and 50 canceled wherein the correct canceled claims are 1-33, 36-46 and 49-50.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,504,898	**Kotler et al.**	**01-2003 (04-2000)**
4,852,138	**Bergeret et al.**	**07-1989**
6,492,645	**Allen et al.**	**12-2002 (06-1999)**

Kotler (U.S. Patent No. 6,504,898) discloses a method and apparatus of irradiating an article using a radiation source on a transport member by positioning a radiation reducing member into or out of a radiation path based on the determination of cumulative radiation.

Bergeret (U.S. Patent No. 4,852,138) and **Allen** (U.S. Patent No. 6,492,645) both disclose a method an apparatus of irradiating an article utilizing a plurality of radiation sources disposed on opposite sides of a transport member.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 34-35, 47-48 and 51-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotler et al., U.S. patent No. 6,504,898 B1 in view of Bergeret et al. US. patent No. 4,852,138 or Allen et al., U.S. patent No. 6,492,645.

Kotler et al., clearly teaches a method and apparatus for optimizing the irradiation of products wherein maximum and minimum dose rates are determined for the given geometry, such as thickness, of the product to be treated and the intensity of the radiation applied is modified such that the entire product receives the optimal amount of radiation consistently. The modification of the radiation is achieved by means for adjustably modulating the shape of the radiation generated by moving plates into and out of the path of radiation during the radiation process. See column 1, lines 20-25, column 3, lines 10-15, column 4, lines 1-15 and 40-50, column 6, line 45, column 7,

lines 25-35 and lines 65-68, column 8, lines 1-47, column 9, lines 25-60, and column 12, lines 60-68.

Bergeret et al., teaches a method and apparatus for optimizing the irradiation of products to control the max/min radiation dose received which includes the teaching that irradiation can be performed in any known manner, either a cylindrical source with the products being rotated such that all sides are irradiated, or a two source configuration where the products are passed there between such that opposite sides are controllably irradiated. Bergeret et al., further teaches that a larger number of products can be processed with a two source panel system, a cylindrical system because the total quantity of products that can be irradiated simultaneously is larger. See column 2, lines 56-68, column 3, lines 1-23 and lines 65-68, column 4, lines 1-16, column 5, lines 32-38 and claim 2.

Allen et al., clearly teaches a method and apparatus for the irradiation of articles wherein a conveyor system is provided having two converging conveyors moving at different speeds and having a gap there between with radiation sources provided on both sides thereof to irradiate products carried by the conveyors. Allen et al., further teaches the desire to maintain a uniform dose rate throughout the articles being sterilized. See column 5, lines 50-68, column 6, lines 33-50 column 8, lines 7-15 and column 9, lines 40-all of column 10.

It would have been well within the purview of one of ordinary skill in the art to substitute plural sources for irradiation and the conveyed system, as taught in Bergeret et al. and Allen et al., in the system of Kotler et al., because it would allow for the

simultaneous treatment of a larger number of products, including those with non-uniform geometries, while maintaining the dose control functions with adjustable radiation.

(10) Response to Arguments

Claims 34-35, 47-48 and 51-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotler et al., U.S. patent No. 6,504,898 B1 in view of Bergeret et al. US. patent No. 4,852,138 or Allen et al., U.S. patent No. 6,492,645.

Claims 34 and 66

(a) The Appellant argues on pages 10 and 11 that:

"Kotler teaches modifying a radiation beam by adjustably modulating its shape, i.e., by employing a radiation collimator."; "the Examiner has failed to recognize the substantial distinction between a radiation collimator, as described in Kotler, and a radiation reducing member (i.e., a radiation attenuator) as described and claimed in the present application."; "Changing the shape of the radiation beam does not alter the intensity of the beam, which is independent of the beam shape."; "the radiation reducing member of the present invention reduces the intensity of the radiation beam directed to an article moving along a linear conveyor."; "the radiation reducing members of the present invention reduce the amplitude of the radiation, not the fractional exposure time of the article."

The specification of the Appellant does not provide a definition for the term radiation reducing member. Page 30, lines 9-11 specifically state that, "the members

320 and 322 **may** be considered as attenuators which reduce the level of the cumulative amount of the irradiation..." Therefore, no limitations are present in the claimed application for reducing the amplitude of the radiation. Kotler clearly discloses radiation reducing members (110) that, "are capable of attenuating a first portion of the radiation while permitting passage of a second portion of the radiation, the second portion of radiation shaped by the adjustable collimator into a radiation beam..." in column 4, lines 31-35 (column 10, lines 40-45). In the very least, Kotler reduces the radiation by reducing the size of the radiation beam (column 8, lines 15-25).

(b) The Appellant argues on page 11 that:

The radiation reducing member of the present invention is moved into or out of the radiation beam. Moving the adjustable collimator entirely out of the radiation beam would create the undesired scenario illustrated in Figures I(a) and I(b). Therefore, the adjustable collimator would never be moved entirely out of the radiation beam.

This argument is not commensurate in scope with the limitations of the claim. The limitations of the claim do **not** disclose moving the member **entirely** out of the radiation beam. The limitations of the claim specifically disclose, "Positioning a radiation reducing member either into or out of a radiation path of a radiation source..." As clearly disclosed in column 8 lines 15-30, the adjustable collimator (i.e. the radiation reducing member) is moved into the radiation beam's path in order to adjust its geometry to the appropriate size in accordance with the size of the object being irradiated.

(c) The Appellant argues on page 12 that:

Modifying Kotler by replacing the turntable with a conveyor would render the device of Kotler unsatisfactory for its intended purpose. Kotler teaches away from the proposed modification because, as Kotler clearly illustrates, the desired radiation profile is achieved by employing an adjustable collimator in conjunction with a turntable. Kotler clearly recognizes that both one sided and two sided irradiation results in a relatively high DUR which is precisely what Kotler intends to avoid.

As disclosed in Figure 8, Kotler discloses a conveyor in conjunction with a turntable that is utilized to transport the objects. As such, it is not required to substitute the turntable of Kotler with the conveyor of Bergeret. Bergeret is merely relied upon to disclose substituting the conveyor of Kotler with the conveyor of Bergeret in order to handle a plurality of packages (column 3, lines 16-20) as well as a plurality of radiation sources in order to provide an ample dose of radiation to said plurality of packages in accordance with their geometry (column 3, lines 9-12).

Additionally, even if the turntable of Kotler was substituted with the conveyor of Bergeret, then Bergeret discloses a method of providing the irradiation in a uniform manner to the objects. The objects are separated according to their geometry, the dose which it is to receive, and by the absorption of the objects (column 5, lines 10-15). The separated objects are sent to an individual conveyor that operates at a certain speed in order to control the exposure time and ensure that the correct amount of radiation is given to the separated package (column 4, lines 55-68; column 5, lines 1-15). With

these conditions, Bergeret controls the optimal min./max dosage ratio in order to ensure accurate irradiation. Furthermore, it is not apparent as to whether the Figures (1a-1e) of Kotler take into account certain variables such as the objects height, width, density, absorption rate and exposure time and therefore cannot be used as an accurate representation of the uniform distribution in an irradiation apparatus such as the one disclosed by Bergeret.

Claim 35

The Appellant argues on pages 12 and 13 that:

(a) the combination of references fails to disclose a radiation reducing member that is positioned out of a radiation path of the radiation source when it is determined that the cumulative amount of radiation will be between the first and second limits. Moving the adjustable collimator entirely out of the radiation beam would create the undesired scenario illustrated in Figures 1 (a) and 1 (b). Therefore, the adjustable collimator of Kotler would never be moved entirely out of the radiation beam.

It is noted that the Appellant does not argue any of the newly cited limitations in claim 35. The response to the argument has already been addressed with respect to claims 34 and 66, argument (b). The response is relied upon here for claim 35.

Claims 47, 51-54, 56-59, 63 and 64

The Appellant argues on page 13 that:

(a) The adjustable collimator of Kotler would never be moved entirely out of the radiation beam because it would create the undesired scenario illustrated in Figures 1 (a) and 1 (b). As a result, Kotler fails to describe a radiation reducing member that is moved between a first position wherein the radiation reducing member is disposed outside of a radiation stream and a second position wherein the radiation reducing member is disposed within the radiation stream.

The Examiner disagrees with the Appellant's assertion that moving the adjustable collimator entirely out of the radiation beam would create the undesired scenario illustrated in Figures 1 (a) and 1 (b). The product is still rotating and would therefore at least create one of the scenarios illustrated in Figures 2a-2e. Furthermore, the reference discloses that using a radiation beam that is wider than the product would result in the desirable scenario as shown in Figure 2e (column 10, lines 29-35). It is also noted that independent claim 47 is a system and not a method. As such, the system of Kotler is fully capable of moving the reducing member outside of the radiation stream. For example, a product may be provided that is exactly the width of the radiation beam. In order to provide an irradiation that is the size of the product (which is the exact reason for said reducing member of Kotler), the reducing member must be moved completely from the radiation stream.

(b) The Appellant argues on page 13 and 14 that:

Neither Bergeret nor Allen discloses a radiation reducing member that is moved into and out of a radiation beam. At most, Bergeret discloses utilizing interference

between articles on parallel transport paths to screen radiation. Allen does not disclose a radiation reducing member.

Neither Bergeret nor Allen is relied upon to teach this limitation. Kotler fully meets the limitations of the radiation reducing member as claimed.

(c) The Appellant argues on page 14 that:

A person having ordinary skill in the art would not substitute the turntable of Kotler with a conveyor. Substituting a conveyor for the turntable of Kotler would result in radiation profiles akin to those illustrated in Figures 1 (a)-l (f). Modifying the shape of the radiation beam in those examples would not change the radiation profiles as it would for the turntable examples. In fact, Kotler clearly recognizes that both one sided and two sided irradiation results in a relatively high DUR which is precisely what Kotler intends to avoid. See Kotler, col. 9, lines 25-61.

This argument has been fully addressed above with respect to claims 34 and 36, argument (c). That response is relied upon here for claims 47, 51-54, 56-59, 63 and 64.

Claim 48

The Appellant argues on page 14 that:

(a) The combination of references fails to disclose a system for irradiating an article that includes a radiation reducing member that is configured to be located in the first position responsive to a determination by the microprocessor that the cumulative amount of radiation is between the first and second limits. Moving the adjustable

collimator entirely out of the radiation beam would create the undesired scenario illustrated in Figures 1 (a) and 1 (b). Therefore, the adjustable collimator of Kotler would never be moved entirely out of the radiation beam.

Kotler provides a control system that records and operates in response to variables of the product including length, width, height, and density (column 4, lines 1-2) wherein the system adjusts the adjustable collimator (reducing member) in column 4, lines 30-36. The Examiner disagrees with the Appellant's assertion that moving the adjustable collimator entirely out of the radiation beam would create the undesired scenario illustrated in Figures 1 (a) and 1 (b). The product is still rotating and would therefore at least create one of the scenarios illustrated in Figures 2a-2e. Furthermore, the reference discloses that using a radiation beam that is wider than the product would result in the desirable scenario as shown in Figure 2e (column 10, lines 29-35). It is also noted that dependent claim 48 is a system and not a method. As such, the system of Kotler is fully capable of moving the reducing member outside of the radiation stream. For example, a product may be provided that is exactly the width of the radiation beam. In order to provide an irradiation that is the size of the product (which is the exact reason for said reducing member of Kotler), the reducing member must be moved completely from the radiation stream.

Claim 55

The Appellant argues on page 15 that:

(a) The combination of references fails to disclose a system that includes a microprocessor that is configured to determine the cumulative amount of radiation that will be applied by an article based on a determination of the thickness of the article.

Kotler provides a control system that records and operates in response to variables of the product including length, width, height, and density (column 4, lines 1-2) wherein the system adjusts the adjustable collimator (reducing member) in column 4, lines 30-36. The collimator is also provided to alter the intensity of the irradiation (column 10, lines 42-45).

Claim 60

The Appellant argues on page 15 that:

(a) The combination of references fails to disclose a radiation reducing member that includes a first portion that has a first thickness and a second portion that has a second thickness and the first portion is disposed within the radiation stream and between the radiation source and the transport path when the radiation reducing member is in the second position.

For clarification, the radiation reducing member in Kotler is disposed within the radiation stream and between the radiation source and the transport path when it is in the second position. As shown in Figure 3(b), the reducing member varies in thickness wherein the end portion closest to the converter (30) is not as thick as the end portion that is closest to the turntable (70). As the reducing member is adjusted, the first

portion is disposed within the radiation stream (column 8, lines 5-15) and between the radiation source (20) and the transport path (50) as shown in Figure 3(b) as well.

Claim 61

The Appellant argues on page 15 that:

(a) The combination of references fails to disclose a radiation reducing member that include first and second portions having different thickness and the second portion is disposed within the radiation stream and between the radiation source and the transport path when the radiation reducing member is in the second position. Even if the adjustable collimator or auxiliary shield disclosed in Kotler were considered a radiation reducing member, there is no disclosure in Kotler of including first and second portions of either having different thicknesses. In fact, because the adjustable collimator is used to shape the radiation beam by blocking portions of the beam, whether it includes portions with different thickness would be immaterial.

For clarification, the radiation reducing member is disposed within the radiation stream and between the radiation source and the transport path when it is in the second position. As shown in Figure 3(b), the reducing member varies in thickness wherein the end portion closest to the converter (30) is not as thick as the end portion that is closest to the turntable (70). As the reducing member is adjusted, the second portion is fully capable of being disposed within the radiation stream (column 8, lines 5-15) and between the radiation source (20) and the transport path (50) when the reducing member is disposed within the radiation stream as shown in Figure 3(b) as well.

Claim 62

The Appellant argues on page 16 that:

(a) The combination of references fails to disclose a radiation reducing member that includes first and second portions having different thicknesses and the first portion is disposed within the radiation stream and between the radiation source and the transport path when the radiation reducing member is in an intermediate position that is between the first position and the second position. There is no disclosure in any of the references of this feature.

For clarification, the radiation reducing member is disposed outside of the radiation stream in the first position and disposed within the radiation stream and between the radiation source and the transport path when it is in the second position. As shown in Figure 3(b), the reducing member varies in thickness wherein the end portion closest to the converter (30) is not as thick as the end portion that is closest to the turntable (70). As the reducing member is adjusted, the first portion is fully capable of being disposed within the radiation stream (column 8, lines 5-15) and between the radiation source (20) and the transport path (50) when the reducing member is disposed at an intermediate position between the first position and the second position as shown in Figure 3(b) as well.

Claim 65

The Appellant argues on page 16 that:

(a) The combination of references fails to disclose a method comprising a step of positioning a second radiation reducing member either into or out of a radiation path of a second radiation source based on a determination of cumulative radiation.

Kotler is relied upon to disclose an irradiation method and system that includes positioning a radiation reducing member either into or out of a radiation path of a radiation source based on a determination of cumulative radiation (column 4, lines 40-50). This is done in order to provide a uniform distribution of radiation to the product. Bergeret is relied upon to disclose utilizing a plurality of radiation systems in order to irradiate a plurality of products at one time (column 3, lines 4-20). It would have been obvious one of ordinary skill in the art to provide a plurality of radiation source in the method as taught by Kotler in order to provide a uniform distribution of radiation as taught by Bergeret and/or Allen. One of ordinary skill in the art would readily recognize that the plural sources of radiation would also be provided with radiation reducing members as shown in Kotler in order to provide uniform radiation distribution to a plurality of different size products. As disclosed in Kotler the radiation reducing member is positioned either into or out of a radiation path of a radiation source based on a determination of cumulative radiation in order to provide a uniform distribution of radiation to the product and irradiate a plurality of products at one time.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Kevin Joyner

GLADYS JP CORCORAN
SUPERVISORY PATENT EXAMINER

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